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The Relationship Between Social Skills and Academic Achievement for Individuals with ADHD: A Literature Review and Research Proposal

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The Relationship Between Social Skills and Academic Achievement for Individuals with ADHD: A Literature Review and Research Proposal

by

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Dedication

This report is dedicated to my beautiful wife who has supported me through this process, to my parents and family who have provided a lifetime of support, and to Eva who loved me more than I can understand. Lastly, I want to thank my grandmother Ruth for her continued support, without which I wouldn't be where I am.

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I want to acknowledge Diane and Toni for their faith and commitment during my time as a graduate student and in helping me to produce this report. Thank you.

Abstract

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Abstract: The following report draws on previous research as a rationale for a proposed study investigating the link between social skills and academic achievement for individuals with attention deficit/hyperactivity disorder (ADHD). The literature lends basis to the hypothesis that social skills may ameliorate the negative outcomes associated with ADHD. ADHD is related to negative outcomes in academic and social domains, including underachievement and exclusion. This is of particular importance because of the prevalence of ADHD and the frequency of social demands. In this report, the literature on academic achievement of individuals with ADHA is reviewed and a study is proposed that would contribute to establishing social skills as a moderator of the relationship between ADHD and academic achievement. Suggestions for other areas of research are also considered.

Table of Contents

List of Figures

Chapter 1: Introduction:

Attention deficit/hyperactivity disorder (ADHD) is the most prevalent behavioral disorder in school-age children (Ayaz,, Ayaz, Yazgan, & Akın, 2013). A recent report estimates that 9.5 percent of children in the United States have been diagnosed with ADHD (Visser, Bitsko, Danielson, Perou, & Blumberg, 2010). Putting that in more manageable terms, one of every eleven children in the country has ADHD. Even with conservative estimates, there is likely to be at least one child who has ADHD in every class, a child may not be receiving the education s/he needs. The following review of the literature addresses an aspect of the disorder that is not sufficiently understood. It has been claimed that social skills play an integral role in developing academic skills (Arnold et al., 2012). Social skills are often seen as a protective factor for students in promoting academic achievement; students with strong social skills are often more focused academically (Fergus & Zimmerman 2005). Because a similar relationship may exist for students with ADHD, the purpose of this review is to explore the evidence connecting the academic achievement of students with ADHD and their social skills.

ADHD AND SOCIAL SKILLS

The goal of the following report is to elucidate the importance of investigating the relationship between ADHD and social skills. Because ADHD is strongly related to negative outcomes in academics, students with the disorder are more likely to fail classes, be held back, and drop out of high school (Barkley, Murphy, & Fischer, 2008).

Additionally, a central deficit of individuals with ADHD is difficulty with functioning in social situations and relating to peers (Barkley, 2006). Yet, social skills are necessary for students to succeed in school (Baker, 1998). Baker (1998) noted that children must be willing and able to engage in social interaction in order to develop knowledge and mediate the learning environment of schools. These findings alone should provide sufficient justification for exploration of the relationship between social skills and ADHD. The following paper discusses the historical and contemporary conceptualizations of the disorder including the etiology, diagnosis, and treatment of the disorder. In addition, the specific importance and impact of social skills research to the understanding of ADHD will be covered.

The prevalence alone demonstrates the need for more research on ADHD, but the frequent misunderstanding related to the disorder further elucidates that need. Recently the validity of ADHD has been under scrutiny (Wright, 2010). The disorder has been accused of being a "fad diagnosis" that lacks scientific basis (Wright, 2010). ADHD has become a colloquialism for explaining negative behavior (Wright, 2010). As early as the 1970s, there has been consideration that ADHD is a "myth" invented to make excuses for student behavior that should be attributed to past training and characteristics of parents, teachers, and schools (Conrad, 1975; Schrag & Divoky, 1975). Although dissenting viewpoints such as this are the minority, it points to the need for increased understanding.

The lack of understanding about ADHD contributes to the misdiagnosis of the disorder (Bruchmuller et al., 2012). Teachers, parents, and physicians fall prey to these misunderstandings related to the disorder (Bruchmuller et al., 2012), leading to the over-

and under-diagnosis of the disorder (Bruchmuller et al., 2012), which in turn is related to the over- and under-prescriptions of treatment medications (Diller, 2000). Although more research is required before conclusions can be drawn these issues in diagnosis and treatment may be related to the common misuse of psychostimulant treatments (Rabiner et al., 2009). The potency of the drugs related to ADHD reaffirms the need for more research on the disorder.

ADHD is caused by a number of different factors (Thapar, Cooper, Eyre, & Langley, 2013). Contributing to the expression of ADHD are genes, psychosocial factors, and pre- and perinatal risk factors (Thapar et al., 2013). There is no singular cause for ADHD; however, each of these causes contributes to the functioning of the brain, which causes the ADHD symptoms to manifest (Rapport et al., 2001). This is important to consider when researching ADHD because researchers must acknowledge that the disorder may manifest differently in different individuals (Rapport et al., 2001). For this reason, creating and testing treatments for the disorder is very difficult. In relation to the current review and proposal, the effects of social skills may vary from individual to individual.

ADHD has many treatments, ranging from psychostimulant medication to behavioral treatments to food-based therapies (Leggett & Hotham, 2011). The seminal paper on treatment of ADHD conducted by a large research group with a nationwide sample found that the only efficacious treatment is psychostimulant drugs (MTA, 1997). However, more recent research has called into question the credibility of those findings (Daley, 2005; Hoekstra, 2011). Though the focus of the following report will be on the

social effects of the disorder the treatments are important to consider because of the impact they may have on social aspects of the disorder.

SOCIAL SKILLS

The construct of social skills, though not as complex as ADHD, has a convoluted history (Gresham, 1986). Many scholars have contributed definitions to the field (Gresham, 1986). A widely accepted definition, put forth by Combs and Slaby (1977), states that social skills are the ability to interact with others in ways that are socially acceptable and produce benefits. Other scholars have written that social skills are a complex ability to produce behaviors that are reinforced and not produce behaviors that are punished (Libet & Lewinsolm, 1973) and that social skills are a set of behaviors that "maximize the probability of producing, maintaining, or enhancing positive effects for the interactor" (Ritchey, 1979 p. 626). The first definition will be used in the current report because it can be simplified to the following: the ability to interact with others in a positive manner. This definition is most similar to the colloquial use of the word, which is important in designing research studies.

MODELS

Numerous different models and terms have been used to describe social skills. Two prevailing models of social skills include the molecular model and the trait model (McFall, 1982). The trait model views social skills as a static predisposition (McFall, 1982). The molecular model considers social skills to be a context-dependent expression

of behavior that is not directly related to a specific personality trait (McFall, 1982). Theorists agree that neither model is entirely perfect and that further consideration is needed (Gresham, 1986). However, the current report will use the molecular model because the demands placed on individuals with ADHD are dependent on context.

The literature on ADHD and the conceptualization of social skills present two separate and extremely complex areas within the social sciences. Each domain has debated over definitional conceptualizations, theoretical base, and modeling. The current report will attempt to provide an understanding of the formidable literature and draw connections between the two domains. The number of children diagnosed with ADHD requires that as much as possible be understood about the disorder. The ubiquity of social demands on everyday functioning in academic, occupational, and extra-curricular domains necessitates research on the effects of ADHD on social functioning.
Social skills may be able to improve the current treatments for individuals with ADHD; social skills may even present new avenues for treatment. Understanding the effects of social skills on ADHD is critical to advancing the field of ADHD research.

Chapter 2: Literature Review:

ADHD has long-term effects on children in terms of social and academic development (Barkey, 2003). Although the disorder is very common, confusion regarding its etiology and diagnosis (Rostain, 2013), creating issues in terms of understanding outcomes and treatment (Rostain, 2013). As research continues to expand the knowledgebase in the literature, more will be understood about the disorder. What follows is a review of the literature on ADHD, paying special attention to social skills research within the domain.

ETIOLOOGY

The etiology of ADHD is similarly mysterious. It is a heterogeneous behavioral disorder with a multiplicity of interacting causes (Rostain, 2013). Fundamentally, the disorder arises as a result of altered neural pathways (Rostain, 2013). This means that individuals with ADHD have atypical transmission of neurotransmitters in the brain. That is, in some individuals with ADHD the brain is unable to supply a sufficient amount of dopamine to facilitate normal functioning (Stahl, 2008). The specific cause of the alteration in brain functioning is uncertain (Rostain, 2013). The disorder is frequently believed to have a genetic basis (Society for Neuroscience, 2012). However, there are also environmental determinants at play that influence the development of the central nervous system (Nigg, 2006). For example, prenatal factors such as stress and maternal smoking are related to increased appearance of ADHD (Nigg, 2006). Postnatal factors

like brain injuries and infections are considered to increase the likelihood of ADHD (Nigg, 2006). The research is less reliable but psychosocial factors, such as socioeconomic status and parenting style, may play a role in the ontogeny of the disorder (Rostain, 2013). The development of ADHD is currently best understood to be a result of complex interactions of biology and environment (Rostain, 2013).

HISTORY

The enigmatic nature of ADHD is more easily understood in light of its long and convoluted history. Crichton documented the first case of an individual with a disorder similar to ADHD in 1763 (Lange, Reichl, Lange, Tucha, & Tucha, 2010). Numerous other reports of the disorder emerged throughout the 1800s, surfacing under different guises: "a defect of moral control" (Still, 1902), "postencephalitic behavior disorder" (Tredgold, 1908), "hyperkinetic disease of infancy" (Kramer & Pollnow, 1932), and "hyperkinetic impulse disorder" (Laufer, Denhoff, & Solomons, 1957) (cited by Lange et al., 2010). In the 1950s, a modern conceptualization of the disorder emerged with a strong focus on the hyperactive symptoms of the disorder (Lange et al., 2010). Beginning in the 1970s, a shift towards an emphasis on the attention related deficits occurred; the disorder was referred to as "attention deficit disorder (with or without hyperactivity)" (Lange et al., 2010). ADHD, as it is conceptualized today, first appeared in the revision of the third edition of the diagnostic and statistical manual of mental disorders in 1980 (Lange et al., 2010). However, the understanding of the disorder and its symptoms continues to evolve.

SUBSETS OF ADHD

Currently, in the ADHD literature, it is agreed that the disorder consists of three dimensions: hyperactivity, impulsivity, and inattention (American Psychiatric Association, 2000). These dimensions are each represented in terms of diagnosis (American Psychiatric Association, 2000). The current method for diagnosing children involves looking at children's behavior over the six months preceding the diagnosis (American Psychiatric Association, 2000). There is a list of nine behaviors associated with inattentive type ADHD (American Psychiatric Association, 2000). If the child exhibits six of the nine behaviors, he or she is considered to have ADHD, predominantly inattentive type (ADHD-PI) (American Psychiatric Association, 2000). The symptoms involved in the diagnosis include behaviors such as "is often easily distracted," "often loses things needed for tasks and activities," and "often does not seem to listen when spoken to directly" (American Psychiatric Association, 2000). These items for diagnosis typify the types of problems associated with children with ADHD-PI.

Another subset of the disorder is ADHD, predominantly hyperactive-impulsive type (ADHD-PH) (American Psychiatric Association, 2000). The diagnosis for this disorder is met if a child demonstrates six of the nine behaviors associated with this type (American Psychiatric Association, 2000). The behaviors include "often talks excessively," "often gets up from seat when remaining in seat is expected," and "often has trouble waiting one's turn" (American Psychiatric Association, 2000). These types of behaviors often characterize the actions of individuals with an ADHD-PH diagnosis.

An individual will be diagnosed with ADHD, combined type (ADHD-C) when the criteria for both subtypes of the disorder are met (American Psychiatric Association, 2000). In order to receive a diagnosis for any type of ADHD, there must be "clear evidence of clinically significant impairment in social, academic, or occupational functioning" (American Psychiatric Association, 2000, pp. 92–93). The use of the word "impairments" in the American Psychiatric Association requirement for diagnosis is intentional; impairments are fundamentally different from symptoms. A symptom is an expression of the disorder in one's behavior (Barkley, Fischer, Smallish, & Fletcher, 2006). Impairment, however, is embodied in the results of the behavior (Barkley et al., 2006). This is an important distinction because it demonstrates that an accurate ADHD diagnosis means that there is significant difficulty in daily functioning. It is not merely the presence of certain behaviors, but the experience of struggle in day-to-day situations. Each of these diagnoses involves different struggles, problems, and stigmas (Barkley, 2006).

The uncertainty of cause and the muddled history understandably give rise to confusion in terms of diagnosis. ADHD is difficult to diagnose for a multitude of reasons; there is no test for the disorder, interpretations of the criteria may vary from physician to physician, and behavior may vary in different environments (Bruchmuller, Margraf, & Schneider, 2012). Two seemingly contradictory issues surrounding diagnosis are overdiagnosis and underdiagnosis (Bruchmuller et al., 2012). The current estimates of the prevalence of ADHD may be inaccurate by large proportions due to inconsistencies and errors in diagnosis (Paule et al., 2000). Although there is consistent agreement over the

criterion for diagnosis, there is varied application of the criterion between those performing the diagnosis (Bruchmuller et al., 2012). According to a recent empirical study conducted by Bruchmuller and colleagues, 62% of diagnoses proved to be incorrect after further evaluation. This is especially disconcerting because of how quickly some professionals are to prescribe psychostimulant medication (Paule et al., 2000). Angold and colleagues conducted a study on the use of medications and found that a majority of children who were prescribed drugs to control ADHD symptoms actually fell below the criteria for diagnosis (Angold, Erkanli, Egger, & Costello, 2000). Heuristic biases have a strong impact on the diagnosis of an individual (Bruchmuller et al. 2012). Whether this stems from a bias toward a specific symptom (Bruchmuller et al., 2012), of boys over girls (Paule et al., 2000), or due to maternal behavior (Murray & Cooper, 1997), the diagnosis of individuals with ADHD is often subject to the predilections of those providing the diagnosis. This provides further justification for the necessity of investigating the relationship of social skills with ADHD because it may provide other criteria for diagnosis or referral, and it may encourage the development of an intervention method that does not carry the same consequences as traditional drug-centric treatments.

The complexity of ADHD makes it very difficult to develop interventions and treatments (Rapport, Chun, Shore, & Isaacs, 2001). Rapport and colleagues created a model to visually represent the disorder, its deficits, and the pathways for treatment. In response to the variation in research findings, they hypothesized that the inconsistencies in research could be traced back to a discrepancy about what was being measured (Rapport et al., 2001). The authors of the model stated that it could be used to define the

purpose of research and interventions and the characteristics of the disorder that are of interest (Rapport et al., 2001). The model (Fig. 1) is included to demonstrate the theoretical framework guiding the present paper and guide the reader in the explication of the specific features of the disorder.

The model visually demonstrates the nature of the disorder with the neurological effects manifesting as a result of genetic and environmental influences (Rapport et al., 2001). In the neurological basis of the disorder directly causes the core symptoms of the disorder: inattention, hyperactivity, and impulsivity. The different subsets have differential expression of the core symptoms (American Psychiatric Association, 2000). Medical interventions seek to minimize this causal relationship (Rapport et al. 2001). The peripheral features of the disorder are a consequence of the expression of the core symptoms. Furthermore, the model elucidates the specific ways that interventions impact the symptoms and outcomes of the disorder.

My focus is directed toward understanding the impact of social skills on the expression of core features and their influence on the peripheral features. Individuals with ADHD frequently have weaker social skills (Barkley, 2003). This is a peripheral feature of the disorder. The current proposal seeks to investigate the effect of social skills on

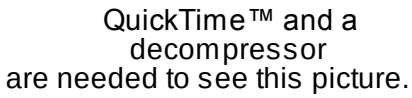

Figure 1: Conceptual Model of ADHD

other peripheral features of the disorder, specifically academic achievement. It is generally believed that interventions aimed at peripheral features will not generalize to other peripheral features or to the core features; however, it is theorized that this hypothesized pattern would not exist when there is a large overlap in the peripheral features (Rapport et al. 2001). There is a great deal of overlap between social skills and academic achievement (Brigman, Webb, & Campbell, 2007), as social skills are involved in learning (Baker, 1998) and they impact how individuals behave in the classroom,

during extracurricular activities, and at home (Arnold, Kupersmidt, Voegler-Lee, & Marshall, 2012).

One issue with the study of ADHD is that although the disorder is succinctly defined, there is little discussion about the types of impairments and specifically how to measure these impairments. ADHD is associated with impaired cognitive, academic, familial, occupational, and social arenas of life (Barkley, 2003). However, the specific symptoms related to each of these domains are largely unclear. Furthermore, the relationship between the functioning in these domains is not adequately understood. This is why ADHD can be so difficult to study; all of the core features may not be present in every diagnosis, and not all of the peripheral features manifest. Adding to the complex nature of the disorder, there is not always a consistent relationship between diagnoses and effects. One hyperactive child may be successful in social domains whereas another may be.

It is important to understand the complexity surrounding the conceptualization of the disorder and the etiology of the disorder because it demonstrates two things: the need for more research on ADHD and the need for development of a greater breadth of treatments. This report seeks to respond to those needs by proposing research on the social impacts of the disorder and proposing possible areas for the development of new treatments.

Recent reviews of the ADHD literature continue to point to the disorder as a performance deficit, not a knowledge deficit (de Boo & Prins 2007; Huang-Pollock, Mikami, Pfiffner, & McBurnett, 2009). These findings indicate that children with ADHD

have an age-appropriate understanding of social conventions, but lack the ability to behave within the constraints of these conventions (de Boo & Prins 2007; Huang-Pollock et al. 2009). Studies demonstrate that children with the disorder will behave appropriately when adequately prompted (de Boo & Prins, 2007). Furthermore, though the effects of psychostimulant treatments on social functioning are debatable there is evidence demonstrating that children with ADHD act more appropriately in social situations when using the drugs (Huang-Pollock et al. 2009). These findings operate under the assumption that children know what is appropriate but the symptoms of the disorder inhibit their ability to apply the knowledge in everyday situations (Huang-Pollock et al. 2009). Although these reviews lend evidence in this direction, there is much debate over the specific processes that make age-appropriate behavior so difficult for students with ADHD (de Boo & Prins 2007; Huang-Pollock et al. 2009).

Initially theorized by Barkley (1997), it has been suggested that problems for students with ADHD stem from difficulty with behavioral inhibition. Behavioral inhibition refers to the inability to inhibit negative and inappropriate behaviors as what leads to issues with working memory, self-regulation, and reconstitution (Barkley, 1997). Furthermore, deficiencies in those arenas leads to problems with self-control, social perspective-taking, following rules, and understanding consequences (Barkley, 1997). Multiple theories on the manifestation of ADHD in behavior rely on this same basic premise (e.g. Quay, 1997; Schachar & Logan, 1990; Sonuga-Barke, 1994). Although the multiplicity of theories does not itself prove the concept, the literature does lend itself to the belief that the inability to exhibit behavioral inhibition does, to some degree, play a

role in the expression of ADHD symptoms and impairments (Charman, Carroll, & Sturge, 2001), with impairments related to the behavioral inhibition aspect of ADHD including not listening, being distracted, exhibiting off-task behaviors, and having trouble switching roles (Landau, Milich, & Diener, 1988; Whalen, Henker, Collins, McAuliffe, & Vaux, 1979). In comparison to controls and children with hyperactive or combined type ADHD, children with ADHD-PI demonstrate more anxiety, shyness, and withdrawal in social situations (Hodgens, Cole, & Boldizar, 2000)

No matter what the underlying mechanism may be, students with ADHD have been reported to experience significant problems with social relationships as rated by teachers and family members (Pelham & Bender, 1982; Mash & Johnston, 1983). In addition to the previously mentioned theories, Dodge and Newman (1981) proposed that the impairments in social functioning arise as a result of the symptom of inattention whereby individuals with ADHD are unaware of pertinent social cues. Furthermore, a later article published by Dodge (1993) proposed a model of social experience for children who are aggressive. In this proposed, model Dodge suggested that individuals go through a series of steps progressing through processing, encoding, mental representation, response accessing, response evaluation, and enactment. Processing is difficult for any child; however, Dodge posited that the symptoms of children with ADHD may derail the sequence at any point. Research needs to be done to evaluate at what specific step the derailment is most likely to occur or to find what precipitates a break in the process.

The effects of ADHD may begin to manifest as early as preschool (Lahey et al., 1998; Spira & Fischel 2005). ADHD may be diagnosed in children as young as four years old (American Psychiatric Association, 2000). This is a critical developmental period for individuals to learn basic social skills (Lahey et al. 1998). It is the first opportunity for many students to learn basic educational skills such as focusing on teachers, interacting with non-family peers, reading, structured language, and mathematics (Spira & Fischel 2005). The inability to control impulses is a key contributor to the difficulty experienced in academic and social domains (Lahey et al. 1998).

A study conducted by DuPaul and colleagues found that children with ADHD compared to healthy controls have difficulty with memory, reasoning, and concept development (DuPaul, McGoey, Eckert, & VanBrakle, 2001). These cognitive abilities are essential to developing academic skills and are related to difficulty acquiring pre-reading and mathematics skills (DuPaul et al., 2001; Mariani & Barkley, 1997)

The seriousness of these results is made especially clear by a longitudinal study conducted by McGee, Williams, and Silva (1991). The study followed a group of preschoolers who were rated as hyperactive (McGee et al., 1991). The key findings of the study found that the subjects had poorer reading ability than controls at ages seven and nine (McGee et al., 1991). Furthermore, at the age of 15, the children were still performing more poorly than controls on assessments of reading performance (McGee et al., 1991). Also, there were significantly more children labeled as reading-disabled in the hyperactive group (McGee et al., 1991).

These findings were not exclusive to children who express hyperactive symptoms; the researchers also found that children with inattentive symptoms had difficulties with reading (McGee et al., 1991). The inattentive individuals participating in the study experienced poor long-term reading achievement. Five years after the initial assessment, it was found that 34% of the inattentive children were reading impaired.

The literature shows that many, and it is important to note that not all, pre-school children who exhibit ADHD symptoms begin school with fewer skills when compared to non-ADHD peers (Daley & Birchwood, 2010). However, it seems that many of the children who start school disadvantaged in this way continue to struggle to catch up. A review of the literature on school readiness conducted by La Paro and Pianta (2000) found that social competence is a key aspect of school readiness in preschoolers. Studies have found a relationship between the development of mathematics skills and social functioning (Dobbs, Doctoroff, Fisher, & Arnold, 2006; Hindman, Skibbe, Miller, & Zimmerman, 2010). Furthermore, research has shown that students may continue to struggle through adolescence (Barkley, Anastoupoulos, Guevremont, & Fletcher, 1991; Biederman, Russell, Soriano, Wozniak, & Faraone, 1998). This view is supported by a review conducted by Loe and Feldmand (2007) that found that children with ADHD demonstrate significant academic underachievement. These children have poor grades, score lower on standardized tests, and are more likely to repeat a grade (Loe & Feldmand, 2007). Furthermore, Barry and colleagues found that children with ADHD achieve significantly lower grades in all subjects (Barry, Clarke, McCarthy, & Selikowitz, 2002).

Understanding the social components of the disorder is essential because of how inextricably linked the social and academic aspects of the disorder are (Barkley, 2003). The impact of social deficits appears to manifest strongly in academic domains (Barkley, Murphy, & Kwasnik, 1996). A small study comparing students with ADHD to students without the disorder found that students with ADHD have significantly lower grade averages (Heiligenstein, Guenther, Levy, Savino, & Fulwiler, 1999). They are also more likely to be on academic probation. However, students with ADHD do not only struggle in terms of grade output, but students with ADHD were also rated significantly lower on teacher ratings of grade level performance, teacher ratings of academic competence as measured in terms of motivation and effort, and on standardized test scores (McConaughy, Volpe, Antshel, Gordon, & Eiraldi, 2011).

The literature supports the view that children with ADHD often struggle socially (e.g. Pelham & Bender, 1982; Mash & Johnston, 1983). Empirical evidence has been found that individuals with ADHD are more often regarded as unpopular and are more likely to be rejected by peers; they experience more conflicts with adults and peers, and they have fewer friendships (Pelham & Bender, 1982). Researchers rate them as more hostile, disruptive, defiant, and prone to break rules (Hinshaw & Mehnck, 1995). They also experience impairments in their ability to communicate (Santosh & Mijovic, 2004). One study showed that children with ADHD were rejected from group play within twenty minutes (Pelham & Bender, 1982). Furthermore, in interviews with the children, they mentioned that they did not want to be friends with the children who had ADHD (Hoza et al., 2005). Popular peers, who the researchers maintain had the most influence among the

children, listed children with ADHD as “non-friends” (Hoza et al., 2005). The development of social skills plays a critical role in academic development (Arnold et al., 2012).

Children with ADHD do not lack desire or interest for interacting with others, but have difficulties with the social requirements of such interactions (Pelham & Bender, 1982). Researchers have theorized that the difficulty some children with ADHD experience in social situations stems from an aggressive nature and hyperactive behavior (Pelham & Bender, 1982). Young children choose not to play with other children who violate rules and behave with hostility (Pelham & Bender, 1982). Children with inattentive type ADHD may also have difficulty with social situations because they are unable to listen to the contributions of social partners or switching roles during and between activities (Arnold et al., 2012). The deficits that begin to emerge during early development continue to manifest making social interaction increasingly difficult as one gets older.

Attention difficulties have been found to be a critical factor negatively influencing the academic development of children with ADHD (Arnold et al., 2012). One explanation for the difficulties experienced by children with ADHD in academic domains is a diminished ability to partake in joint attention. Joint attention is the process where two individuals focus attention on the same specific object or person (Tomasello & Farrar, 1986). Executive function, a common deficit of individuals with ADHD, plays an important role in the ability to participate in joint attention (Mundy & Acra, 2006). Joint attention is a critical skill for developing infants (Tomasello & Farrar, 1986) and plays a

role in language development, helping children to learn words and comprehend and produce sentences (Tomasello & Farrar, 1986). Skills such as these are incremental, and a delay in development will hinder the development of future skills. Some of the skills that might be hindered are learning to follow instructions or understanding social cues (Tomasello & Farrar, 1986). The inability to respond reciprocally to social cues will have a dramatic impact on social development (Tomasello & Farrar, 1986).

Many children with ADHD begin school without key skills necessary for succeeding in an academic setting; they enter structured school settings without the same preparation as their non-ADHD peers (Biederman et al., 1996). These children begin a cycle of underachievement struggling with academic work (Biederman et al., 1996; McGee et al., 199; Rabiner & Coie, 2000). When compared with controls, children who start school with this disadvantage are more likely to be placed in remedial classes (Biederman et al., 1996). Children who demonstrate symptoms related to ADHD performed significantly worse on standardized tests of reading and mathematics ability (Merrell & Tymms, 2001), thereby influencing class placement and progression in grade level (Merrell & Tymns, 2001). Though standardized test scores do not always accurately predict academic achievement, other studies have found similar relationships between children exhibiting ADHD symptoms and poor school performance (Diamantopolou, Rydell, Thorell, & Bohlin, 2007; Rodriguez & Baylis, 2007). Furthermore, Rodriguez and Baylis (2007) found that children who lacked these core skills had stronger problems with inattention providing support for the negative effects of inattention on joint attention.

These deficits lay the groundwork for a lifetime of underachievement (Barkley, DuPaul, &McMurray, 1990). Studies of adults and adolescents have demonstrated that many individuals with an ADHD diagnosis perform poorly in school and are likely to drop out (Barkley, Murphy, & Fischer, 2008; Barkley et al., 1990). The students who are able to continue their education in a university setting find difficulty with tasks, such as studying, note-taking, time-management for example, that are essential to academic achievement in a university setting (Javorsky & Gussin 1994; Reaser, Prevatt, Petscher, & Proctor, 2007).

There is a limited foundation of long-term longitudinal studies, but one study conducted by Mannuzza and colleagues (1993) found that a sample of adults who were diagnosed with ADHD as children progressed significantly less far in education. It was found that 12% completed bachelor's degrees, whereas almost half of the control sample attained that degree. Furthermore, only 1% went on to complete a postgraduate degree compared to 8% of controls.

Research on typically developing students reveals that stronger social skills are related to stronger academic development (Arnold et al., 2012). Furthermore, this connection was found when researchers controlled for attention and aggression problems (Charman et al., 2001). This is interesting because it points to the relationship between social skills and academic development across levels of attention and aggression. This finding points to a relationship for students with and without ADHD because it presents a method for intervention that will be applicable in general education, as it can reach both students who have the disorder and those who do not.

Crosnoe and colleagues (2010) found that positive relationships with teachers can ameliorate the negative effects of frustration, a common result of ADHD. The ability of social skills to provide a way for students with ADHD to overcome frustration makes it even more appealing as an avenue for intervention. Furthermore, positive teacher relationships were a predictor of achievement (Crosnoe et al., 2010). These are important findings in the field of ADHD research because they point to interventions that can be implemented cost-effectively and in general education classrooms. Fostering positive relationships with students with ADHD can be incorporated into teacher training as a method for improving academic achievement. However, a correlation between executive function and social competence was found for typically developing children, but not for children with ADHD (Arnold et al. 2012). This is, as mentioned earlier, believed to be an effect of poor behavioral inhibition (Barkley, 1997). The variability of results points to a need for more research and a more standardization of definitions.

A review of the literature points to one major conclusion: a need for further clarification and investigation into the specific symptoms and impairments of ADHD. Encapsulated in this future direction is the need for a deeper understanding of the social impacts of the disorder. In the following section, necessary steps for future research on ADHD, specifically covering the domain of social skills, will be covered.

Chapter 3: A Needed Program:

The detrimental effects of ADHD on individual achievement (Barkley et al., 2008) and the extensive social costs of the disorder (Birnbaum et al., 2005) clearly demonstrate the desperate need for continued research on the disorder. More research needs to be invested in discovering the specific sources of the disorder, whether genetic, environmental, or an interaction between the two. Understanding the dynamic influences of these inputs will grow the field's awareness of the disorder and how it manifests. Although more must be known about the foundations of the disorder, present research needs to continue to look at the factors influencing outcomes. These considerations are workably innumerable, so the present declaration of the need for future research will focus on the social impacts of the disorder. Early studies that looked into ADHD and social skills focused on the effects of drugs on anger management and judging the behaviors of others (e.g. Hinshaw et al., 1989; Whalen et al., 1990). Studies like these initiated the necessary investigations into social skills research for children with ADHD, but the impact of social skills is far more widespread than simply anger management. This, coupled with the extreme variability of ADHD (Rapport et al., 2001), demonstrates the need for future research on the social aspects of ADHD.

This leads to the current research question that I feel needs to be addressed first: is there a relationship between social skills and academic achievement for students with ADHD? The existence of a relationship would allow for the development of new interventions. Social skills interventions are desirable because they can be implemented

in schools, do not require psychostimulant medication, can be presented in general education classroom environments, and would yield benefits outside of the school setting. Furthermore, beyond the development of specific treatments, it is imperative to have a complete understanding of the disorder. However, this is merely the tip of the iceberg; the impact of social skills on ADHD and vice versa may be significant in domains other than academics and may be influenced by other variables. The following section will describe a research study and other areas for future investigation that I believe would begin to establish the connection between social skills and academic achievement.

PROPOSED STUDY

The hypothetical study being presented is framed based on the model of ADHD created by Rapport and colleagues (2001). The model clearly illustrates the different aspects of the disorder. Inattention, a core symptom, is distinguished from forgetfulness, a peripheral symptom caused by the core symptom (Rapport et al., 2001). This is useful in executing research and developing interventions because it allows a researcher to focus on specific behaviors and understand what to expect as an outcome. Interventions can target one of four levels, substrate, core, peripheral, and environmental (Rapport et al. 2001). This knowledge is imperative to the successful study of ADHD because it elucidates the possibilities of research and helps researchers be certain they are studying what they mean to. In the past, the efficacy of research studies has been questioned due to the variability of measures (Rapport et al., 2001).

The proposed study would investigate the effects of and outcomes related to peripheral features. Social skills and academic achievement are considered peripheral features (Rapport et al. 2001). The study being proposed would examine the effect of a peripheral feature on another peripheral feature. This is correlational research that would examine the influence of differences in skills on the exhibition of peripheral features of the disorder. The overlap between social skills and academic achievement provides the rationale for the ability of the former to influence the latter (Fergus & Zimmerman, 2005). Furthermore, previous research investigating the influence of peripheral feature interventions has demonstrated significant results for changes in other peripheral features (Carlson, Pelham, Milich, & Dixon, 1992).

The methodology of an exploratory study is outlined below, followed by an explication of necessary follow-up studies. This foundational study would provide the basis and framework for understanding future studies in the area of social skills. Due to its importance in establishing a theoretical bedrock for this research area, the details of the initial study will be explicated to some depth.

Participants and Design

The initial exploration of the relationship between social skills and academic achievement would need to be a correlational study done using a matched-pairs paradigm with a sample of students with ADHD and non-ADHD students. First and foremost, a study of this nature would allow researchers to establish a clear relationship between the two constructs, social skills and academic achievement. This would be the backbone of

the research area. Using a matched-pairs design would provide insight into the nature of social skills, whether it is a protective or promotive factor in regard to success in academics. If it were a protective factor students with ADHD would see improved outcomes in academics (Fergus & Zimmerman, 2005). However, if it were a promotive factor all students, regardless of diagnosis, would benefit from having improved social skills (Fergus & Zimmerman, 2005).

This study would require a large sample; factors influencing academic outcomes are often difficult to uncover so a large sample would be necessary (Baker, 2003). This is especially true for research on individuals with ADHD because of comorbidities that may alter or hide a relationship (Jensen et al., 2001). To build on the subsequent ADHD literature which is heavily centered on children, this research should use participants ages 5 – 12 (Weir, 2012). Although previous research is predominantly focused on boys (Hinshaw, 2002), the proposed study should sample both male and female populations because of the differences in socialization between boys and girls (DiPietro, 1989).

Measures

The proposed study should use a survey to assess social skills and grade point average (GPA) to assess academic achievement. The Social Skills Rating System (SSRS) is commonly used in studies similar to the one proposed. Its use in similar studies will allow for comparisons to be made with these other studies. The SSRS is empirically founded and has positively reviewed (Swanson & Malone, 1992). It measures both positive and negative aspects of social behavior, which is an important consideration for

individuals who may be socially impaired. It uses parent, teacher, and student responses to paint a holistic picture of the individual's social skills ("Social skills rating"). This is important because individuals with ADHD often have an inaccurate understanding of their own social capabilities; students with ADHD rate their own popularity much higher than their peers evaluate them (Pelham & Bender, 1982). The use of multiple inputs will minimize bias. The survey also includes an academic section that will provide a picture of an individual's academic competence, assessing variables like the student's motivation and parental support. Although the proposed study will measure academic achievement, as opposed to academic competence, this will provide information that may be useful in post hoc tests.

CULTURE

ADHD is prevalent around the world (Barkley, 2002). Countries from Japan to Korea and Australia report large portions of the population being diagnosed with ADHD (Barkley, 2002). In Markus and Kitayama's (1991) seminal paper on the cultural experiences in typical eastern and western cultures, they discussed the markedly different social norms within these types of societies. For example, they find that eastern societies often operate under collectivist frames of reference and western societies typically have more individualistic predilections (Markus & Kitayama, 1991). Future research should investigate the relationships between ADHD and social skills in collectivist cultures and individualistic cultures. This would allow researchers to understand the specific mechanisms that influence the social deficits of ADHD. A hypothesis for this type of

research could be that individuals with ADHD struggle more in eastern societies because of the value that collectivist societies place on social cohesion might lead to the exclusion of individuals with ADHD. Further research could investigate the implications of findings, in either direction, on the academic and occupational outcomes for children. This research would also inform best practice for how to frame social situations for children with ADHD.

GENDER

In addition to cultural differences in the expression of ADHD in social domains, future research should investigate if there are variable social outcomes for children with ADHD dependent on gender. ADHD is more commonly diagnosed for boys than for girls by a ratio of about 3:1 (Barkley, 2003). Much of the research on ADHD has used samples comprised mostly of male participants so the effects of gender on ADHD, especially in social settings, are unknown (Hinshaw, 2002). Girls and boys often demonstrate different preferences in terms of social interaction (Eaton & Enns, 1986; DiPietro, 1989). Girls often prefer play that is less active and more focused on conversational interaction (Eaton & Enns, 1986). Boys, on the other hand, typically prefer more active play centered on movement and physical exertion (DiPietro, 1989). The peripheral features of ADHD, such as difficulty sitting still, are more acceptable in terms of the type of play undergone by boys than by girls. For this reason, research should investigate the existence of a differential impact of ADHD for boys and girls on social development. ADHD may have a more critical, negative impact on the social development of girls that might lead to

other negative outcomes. More research on the differences between genders on the expression of ADHD is necessary.

SOCIOECONOMIC STATUS

Another necessary branch of research on the social effects of ADHD looking into the demographic factors is investigating the effects of socioeconomic status (SES). This is necessary because the treatment opportunities available to students may depend on SES. There is a very limited research base investigating the moderating effects of SES on ADHD (e.g., Rieppi et al., 2002; Bussing et al., 2012; Weiss & Hechtman, 1993). Although these studies reported no relationship between SES and treatment outcomes (Rieppi et al.) and no relationship between SES and perception of treatment (Bussing et al.), these findings must be retested because the studies are limited. These studies only investigated the relationship between SES and treatment. One study found a slight, but insignificant relationship between SES and the prevalence of ADHD (Weiss & Hechtman, 1993). Weiss and Hechtman (1993) explained the weak relationships found in the other studies as a result of differential family structures related to SES that differentially influence individuals with ADHD. The social experiences of high and low SES individuals can be very different (Thompson & Subich, 2011), and these differences may manifest in expression of ADHD symptoms. Furthermore, the negative social experiences may impact individuals in different SES groups differently. Understanding the social experiences of children with ADHD in different SES groups is critical to optimizing treatment.

Family Structure and Parenting Style

Another variable that will affect the social outcomes of individuals with ADHD is family structure (Healey, Flory, Miller, & Halperin, 2011; Modesto-Lowe, Danforth, & Brooks, 2008). Healey and colleagues and Modesto-Lowe and colleagues both investigated the impact of parenting style of ADHD (2011; 2008). Positive maternal parenting style moderated the relationship between ADHD symptoms and the severity of impairment for children (Healey et al., 2011). Modesto-Lowe and colleagues (2008) reported that previous research indicates that parents of children with ADHD are often less responsive and more corrective than parents of children without ADHD. Furthermore, previous research has found a relationship between parent psychopathology and ADHD diagnoses for children (Chronis-Toscano et al., 2013). These are important findings to consider due to the dynamic relationship between parents and children and how this relationship impacts developmental processes (Healey et al., 2011). Research should also study the effects of parent relationship on the development of ADHD and the related social factors. Being raised in a single-parent home or by a grandparent may influence the developmental outcomes of children with ADHD. Research performed on typically developing children found that children in unstable living environments are often less ready for school academically and socially (Connell & Prinz, 2002). Understanding how different living situations affect the expression of ADHD symptoms will allow practitioners to improve the outcomes for children. Future research needs to expand on these findings to investigate the social outcomes of children with ADHD in

relation to parenting style and family structure. This type of research would shed light on the best methods for parenting children with ADHD to improve their outcomes.

Across the Lifespan

The social demands of elementary, middle, and high school and occupational domains are extremely variable. It is necessary for researchers to explore the effects of ADHD for individuals in different life stages. One particularly important reason for this research area is the progressive development of academics. An individual who struggles in elementary school may be at an exponentially worse disadvantage in high school. Contrarily, research might reveal that the social effects of ADHD do not become detrimental until high school. Understanding the chronology of the development of the disorder is critical to fostering a complete understanding and developing treatment depends on a complete understanding of the disorder.

Contextual Effects

Furthermore, like the sequence of the disorder, it is similarly important to understand the breadth of effects at a given time point. That is, research should seek to understand the effects of the disorder in different aspects of life. For example, many children do not take drug treatments on the weekends because they are not going to school (Leggett & Hotham, 2012). However, there are still likely to be social interactions that would be negatively affected by the presence of symptoms. It might be the case that negative social interactions on the weekends may be related to negative interactions at

school. The effects of these interactions may cause a child to dislike school or to feel excluded in school. A child who has negative feelings about school is more likely to perform poorly (Arnold et al., 2012). Other variables may also influence the child in non-school settings. A child may take medication to help him or her during school, but not after school while trying to work on homework. The frustration of being unable to concentrate while doing homework may negatively impact his or her understanding of the material or his or her success in school. Understanding the effects of the disorder in all domains is essential to the treatment of the disorder because the disorder does not exclusively impact academic domains (Barkley, 2003).

SCHOOL-BASED VARIABLES

Another area of research that needs to be developed in the ADHD literature is the differential impact of school-based variables on the effects of ADHD. The type of school, the size of classes, the size of the school, the length of classes, and the type of assignments will all have strong social effects on individuals with ADHD. These influences are important to understand because they may provide avenues for intervention that improve the outcomes for children with ADHD. For example, there have been research findings that students with ADHD do significantly better in smaller classes, but only in certain contexts (Hart, Massetti, Fabiano, Pariseau, & Pelham, 2011). Intuition might lead an individual to believe that all students, regardless of diagnosis, would do better in smaller classes. However, the aforementioned research found evidence to both support and negate that conclusion. Students with ADHD exhibited more on-task

behavior in small group settings during instructional periods (Hart et al., 2011). However, students with ADHD who are given free time to finish assignments completed more work, and did so more accurately, in whole-group settings when compared to small-group or independent settings (Hart et al., 2011). These findings demonstrate the variability of ADHD and the necessity for more research on the social effects of ADHD in the classroom and school settings. The social impacts of ADHD influence children differently in small-group settings and whole-class settings (Hart et al., 2011) and similar relationships may exist with test-taking or studying. Investigating these relationships is critical to bringing about the best outcomes for children with ADHD.

SUBTYPES OF ADHD

The subtypes of ADHD definitionally represent different symptoms of the disorder. Research should continue to investigate the variations in social outcomes by subtype. The characteristic behaviors of each subtype will manifest differently in social situations (Solanto, Pope-Boyd, Tryon, & Stepak, 2009). For example, children with ADHD-PH may act more impulsively and break social norms and children with ADHD-PI may have trouble actively engaging in conversation (Solanto et al., 2009). Previous research demonstrates that children with ADHD-PI struggle with assertiveness and children with ADHD-C struggled with self-control (Solanto et al., 2009). These variations in social dysfunction will lead to different outcomes (Solanto et al., 2009). The demands and deficits of individuals with ADHD vary by subtype (Solanto et al., 2009); research on the social effects of ADHD needs to seek greater understanding of the

differences in subtypes. This information will allow practitioners to specifically tailor programs to the needs of an individual.

CO-MORBIDITY

Unfortunately, ADHD is often a co-morbid disorder (Jensen et al., 2001); that is, it often co-occurs with other disorders such as oppositional-defiant disorder, anxiety disorder, conduct disorder, and even other learning disabilities (Wilens et al., 2002). Co-morbidities present complex issues to understanding the effects of disorders because it is difficult to pinpoint the specific cause of a behavior (Takeda, Ambrosini, deBerardinis, & Elia, 2011). Research demonstrates that the occurrence of co-morbidities with ADHD is over 60% (Jensen et al., 2001). Understanding the social implications of ADHD under the influence of co-morbid disorders is essential to developing a complete understanding of the disorder and creating effective treatments.

INTERACTION ANALYSIS

Another area of research is investigating the interactions in these analyses. Interaction analyses provide a complete look at the relationships in question. Similar to investigating the effects of co-morbid disorders, it is important to pinpoint the precise causes or circumstances for specific relationships. In pursuit of a complete understanding of the social effects of ADHD, researchers need to probe the relationships between variables and determine if interactions exist. For example, it would be important to know if the differences in social impairments for ADHD-PI and ADHD-C vary differentially at different grade levels. Findings of this nature would allow researchers to recommend optimal environments for students at different grade levels. The structure of classrooms

change as students progress, and the expression of symptoms related to ADHD may vary in the different settings.

LONGITUDINAL STUDIES

Another area for research on the social impacts of ADHD is longitudinal studies. Longitudinal studies provide a look at long-term outcomes. This would benefit the ADHD literature because it would inform researchers and practitioners about the most stringent needs of students. For example, longitudinal research has demonstrated that ADHD is associated with lower educational attainment (Mannuzza et al., 1993), but a relationship might be found between social skills training and college graduation. Though this is purely speculative, such a finding would demonstrate the need for long-term understanding of the effects of ADHD. Furthermore, there is debate over the longevity of ADHD symptoms but between 30-60% seem to persist into adulthood (Weiss & Hechtman, 1993). Longitudinal investigations looking at the specific characteristics of individuals who no longer have issues with ADHD compared with those whose diagnoses persist may shed light on the underlying factors. Social factors may be critical to understanding this phenomenon because social interactions occur throughout the lifespan. Longitudinal research is essential to answering questions about the long-term outcomes related to ADHD: why do some individuals pursue higher education and why do some individuals stop experiencing the core features of the disorder?

DEFINITIONAL CONSIDERATIONS

Future research on individuals with ADHD is especially necessary due to the history of the conceptualization of ADHD and the related research. Due to changes in the definition of ADHD, current research needs to be certain to address ADHD consistently and accurately. Stein (2007) stated specifically that past research using clinical trials have been conducted based on a different baseline of symptoms. The variations in definition may indicate that children included in past studies do not meet the current requirements for diagnosis or that an entire segment of the population was overlooked due to a different focus in diagnosis at that time (Stein, 2007). Barkley (2006) commented that through the mid-1990s, much of the research on ADHD had no theoretical basis. It is important for future research to be guided by theory so research can be replicated and the efficacy of findings not questioned. The current proposal uses a theoretical foundation (Rapport et al., 2001) to guide the research. Future research must follow in this regard to insure the credibility of findings.

All of these areas present different ways that an ADHD diagnosis may influence a child. Whether it is the effect of a certain environment, of a treatment, or over the long-term, each of the aforementioned research areas is a critical component of a complete understanding of ADHD. These different research avenues are essential for creating and recognizing the best treatments and interventions for children with ADHD. Research on the social effects of the disorder, as discussed, is essential because of the inextricable link between social and academic outcomes (Arnold et al., 2012).

Chapter 4: Conclusion:

ADHD is the most prevalent behavior disorder diagnosed among children (Ayaz,, Ayaz, Yazgan, & Akın, 2013). This has been stated already in this report, but it requires noting again. Children and adults must deal with difficult circumstances that negatively impact all aspects of their daily lives. The academic community needs to investigate more assiduously the disorder and its related outcomes. The social costs of the disorder reaches into the billions (Birnbaum et al., 2005). The most startling of these findings is that $3.7 billion dollars was lost as a direct result to work loss by adults with ADHD. These are conservative estimates; they do not account for the lower levels of education attained by individuals with ADHD (Birnbaum et al., 2005). If children and adults with ADHD were allowed the same opportunities as typically developing individuals, not only would the social burden on society be reduced, but it would directly improve the lives of 9.5% children (Visser et al., 2010). Indirectly, the lives of every student would be improved. The importance of this task cannot be overlooked.

ADHD is a very complex disorder. It is unpredictable in how it will affect specific individuals; some individuals may experience problems predominantly with inattention, hyperactivity, or both (Rapport et al., 2001). These are the core features of the disorder that impact the peripheral features of individuals (Rapport et al., 2001). This is important to consider because the definitional variations in ADHD throughout its history create problems in developing research. The research I proposed is based on a conceptual model of ADHD that traces the difficulties that students face from genetic factors through

neurological manifestations and expression of the core features (Rapport et al. 2001). In my report, I discussed the impact of one of the peripheral features, social skills, on the expression of other peripheral features, most notably academic achievement.

Social skills are an aspect of life that are interwoven into every aspect of life. Social functioning is required in school, in the workplace, at home with families, and in almost every domain of life. Although there is debate in the literature, social skills have been conceptualized as the ability to interact with others in a way that produces the most positive outcomes (Combs & Slaby, 1977). Social functioning is critical to success, especially in the domain of academics (Baker, 1998). According to Baker (1998), social interactions are an essential part of learning; without social interaction learning can not take place. Social skills are a critical skill involved with school readiness (Arnold et al., 2012). Individuals who do not demonstrate the same prowess with social functioning experience difficulty in school (Biederman et al., 1998). These findings are especially alarming because of the longitudinal nature of ADHD. Up to 60% of individuals with ADHD continue to express symptoms into adulthood (Weiss & Hechtman, 1993). A longitudinal study conducted by Manuzza and colleagues (1993) found that the individuals who were behind in adulthood were the same individuals who were behind in childhood. Understanding the effects of ADHD is critical to improving the long-term outcomes of students.

This is important for each individual with the disorder, but also every individual who is in a classroom with someone who is diagnosed with ADHD. Research has demonstrated that the effects of ADHD do not exclude individuals without the diagnosis.

Students without the disorder suffer. Students with ADHD may require more teacher attention. Students with the disorder may participate less in group activities and disrupt the class more often. These characteristics of the disorder can easily have a negative impact on the experiences of all individuals.

The current report has proposed directions for future research that may reveal avenues to alleviate the negative effects of ADHD. The proposed study on the possibility of social skills exhibiting a moderating effect on the relationship between ADHD symptoms and academic achievement could open new doors for the development of treatment. The development of social skills interventions could provide a cost-effective method of improving the outcomes of individuals with ADHD. Positive social skills are related to higher levels of academic achievement in typically developing individuals (Fergus & Zimmerman, 2005). The results of this study would provide insight into the effects of the disorder. Social functioning is a deficit related to ADHD (Barkley, 2003). Inattention and hyperactivity are more commonly acknowledged and more researched deficits related to ADHD; however, research done on social skills may reveal that social deficits play an integral role in the expression of ADHD symptoms. Social skills trainings could be incorporated into general education as a treatment for individuals with ADHD. These possibilities may seem quixotic, but are not completely irrational. The possibility of findings such as this presupposes the necessity of developing future research on the effects of social skills on ADHD.

However, the effect of social skills on the academic outcomes of students with ADHD is one domain of future research that should be investigated. Social skills may

have differential effects for boys and girls. The impact of social skills may vary by domain and by age. Culture may alter the influence of social skills. Future research should investigate these relationships to improve the outcomes for individuals affected by the most common behavioral disorder (Ayaz,, Ayaz, Yazgan, & Akın, 2013).

CLOSING REMARKS

ADHD is everywhere. Children and adults must deal with the symptoms of the disorder on a daily basis. Misperceptions about ADHD are ubiquitous, as well. Misunderstandings of ADHD as a "fad" or a product of bad parenting negatively impact the experience of individuals with ADHD (Wright, 2010). This reality points to the need for more research on ADHD.

The research literature demonstrates the possibility of social skills to operate as a protective or promotive factor for individuals with ADHD. Research needs to investigate this relationship. Doing so carries the possibility of dramatically improving the outcomes of individuals with ADHD.

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